remaining 4 showed partial heart-block with dropped beats, and in 1 of them the degree of 2–1 heart-block. These phenomena invariably disappeared during convalescence. The observers conclude that heart-block is common in rheumatic fever; that it indicates acute myocarditis; that it may, therefore, be premonitory of chronic myocarditis and eventual heart failure.

Cerebrospinal Fever.—The importance of the anti-endotoxin content of antimeningococcus serum. GORDON (*Med. Research Council,* London, 1920, 93–109, Special Report Series, No. 50), in the course of his studies, found that an important factor in the pathogenicity of the meningococcus consists of a powerful toxic agent closely bound up with the bacterial protein. This endotoxin is liberated either by an external lysin or by the autolytic enzyme contained within the coccus itself. That the efficiency of an antimeningococcus serum is modified greatly by the quantity of anti-exdotoxin it contains is illustrated by the results obtained in the treatment of a series of cases in the London district. Here the mortality was 18.5 per cent. as contrasted with a mortality of 48 per cent. elsewhere. Investigation of the serum used in this district revealed the fact that its anti-endotoxin titer was high, whereas the sera used elsewhere possessed little or none as revealed by protection experiments. Later it became necessary in this same district to introduce a different lot of sera. The mortality immediately rose to approximately 50 per cent. From his studies Gordon concludes that anti-endotoxin is the most important individual antibody identified so far in antimeningococcus serum. He feels that the conception that cerebrospinal fever is a disease in which one of the essential features is the struggle between the endotoxin of the infecting agent and the ability of the patient to form anti-endotoxin brings this disease into line with infections in which serotherapy has achieved some of its greatest successes. At the time of this report the anti-endotoxin content of type i (Gordon) antimeningococcus serum was much higher than that of the type ii (Gordon) antiserum and the therapeutic results correspondingly better. Further work on anti-endotoxin serum for type ii infections is being carried out.

Diffuse Adenomatosis of the Thyroid Gland.—GOETSCH (*Endocrinology,* Los Angeles, 1920, No. 3, iv, serial No. 15, 389–402) reports the study of "borderline cases" in which the familiar syndrome of hyperthyroidism is present (asthenia, loss of weight, nervousness, labile pulse, mild tachycardia, perspiration and tremor, occasionally depressions, often hyperpyrexia) but in which physical examination reveals no gross thyroid gland changes and no eye signs. The diagnosis in these cases lies between mild hyperthyroidism, incipient tuberculosis, various forms of psychoneuroses and perhaps certain chronic infections. In a series of 15 such cases in which the usual medical treatment had failed and which gave a positive epinephrin hypersensitiveness test the author advised operation—usually consisting of a bilateral partial resection of the thyroid gland. The author reviews briefly the accepted pathological change occurring in the gland which are associated with hyperthyroid symptoms: (1) Slight or moderate hypertrophy and hyperplasia of the alveolar epithelium surrounding the colloid, giving rise to a mild hyperthyroidism such as occurs in association with the hyperplastic gland of puberty, pregnancy, menstruation, etc.; (2) more advanced alveolar parenchymal hypertrophy and hyperplasia, as in exophthalmic goiter; (3) discrete thyroid adenomata arising probably from individual groups of the interstitial epithelial cells (Wölfler) which occur in the interstices between the normal acini. To this classification of pathological thyroid changes associated with hyperthyroidism Goetsch adds a fourth which he calls "Diffuse Adenomatosis," and whch is characterized by a general overgrowth of the interstitial cells (Wölfler) and hyperplasia of the acinar epithelium, as contrasted with the circumscribed overgrowth of the former which results in discreet adenomata. He reports 15 cases, mostly young adults, presenting a syndrome characteristic of possibly hyperthyroidism, incipient tuberculosis, neuro-circulatory asthenia and allied conditions. Eye signs and positive clinical findings in the thyroid gland were absent. They failed to respond to medical and hygienic treatment. Many failed to show increased basal metabolism. All gave positive reactions to the epinephrin test. Ten of of the fifteen cases had had sanatorium treatment for tuberculosis; one was a case of paroxysmal tachycardia; one a case of weakness, nervousness and tremor of unknown origin; three complained primarily of nervousness and weakness. In each case an extensive bilateral partial lobectomy was performed, about three-fourths of the gland substance being removed. The glands from these cases showed fairly uniformly the changes which lead the author to introduce the term "Diffuse Thyroid Adenomatosis." The patients so treated showed from a moderate to a very remarkable improvement.

Metabolism in Tuberculosis.—McCANN and BARR (*Arch. Int. Med*,. 1920, xxvi, 662) give a detailed report of clinical calorimetric determinations on 15 cases of pulmonary tuberculosis, which they summarize as follows: "(1) The basal metabolism of tuberculous patients may be normal or very slightly above that of normal men of the same size. Thus, in 10 cases, the variation from average normal was from minus 3 to plus 15 per cent. (2) Further increases in metabolism occur with a rise of body temperature. These increases are not large. Thus 1 case was given in which the temperature rose 1° C. during two hours without a chill. The heat production of the second hour was only two calories greater than that of the first hour. With a rectal temperature of 104° F., the metabolism may be 30 per cent. above the average normal. (3) The basal heat production in tuberculosis may be less than the normal for the same patient when in health; in other words, the loss in weight may be accompanied by a reduction in metabolism which more than compensates for the tendency to increase caused by the disease. (4) Limited data regarding the nitrogen excretion show that, while a toxic destruction of protein does exist in tuberculosis, it is not large. The urinary nitrogen may be reduced to from 5 to 6 gm. per diem, though nitrogen balance may be attained only at a higher level (about 10 gm. a day). (5) The specific dynamic rise in metabolism produced in 2 cases by the ingestion of a protein meal corresponded closely with that produced by the same meal in three normal men." *Conclusions.* In view of the fact that the food requirements of tuberculous patients are not large, either as regards total energy value or nitrogen content, forced feeding is unnecessary and is probably harmful in the active stages of pulmonary disease. Since protein increases the respiratory exchange in the tuberculous as in normals it may be well to limit the protein intake during periods of activity (of the disease) in order to put the lungs at rest.

SURGERY

UNDER THE CHARGE OF

T. TURNER THOMAS, M.D.,

ASSOCIATE PROFESSOR OF APPLIED ANATOMY AND ASSOCIATE IN SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE PHILADELPHIA GENERAL AND NORTHEASTERN HOSPITALS AND ASSISTANT SURGEON TO THE UNIVERSITY HOSPITAL.

The Treatment of Chronic Empyema.—Tuffier (*Annals of Surgery*, 1920, lxxii, 3, 266) gives us his conclusions, based on 91 cases of empyema which he operated on from August, 1914 to December, 1919. Exploratory puncture to determine the bacteriological nature of the effusion is of first importance. Pneumococcic pleurisies are mild and often cured by simple aspiration, while streptococcic pleurisies are grave and most often require thoracotomy. If repeated punctures leave a residuum as shown by radioscopy, thoracotomy is done in the postaxillary line. Evacuations of the effusions and disinfection of the pleura follow. Some cases can be closed immediately. Large cavities are dakinized. All of Tuffier's cases have been seen from six months to three years after operation. Thoracic deformity was slight. Chronic pleurisies are exceptional when acute effusions are well treated. Costal resection in the treatment of chronic empyema should be reduced to a minimum. Closure of the surgical incision and pleural decortication should be preceded by disinfection of the cavity.

Roentgenographic Appearance, Diagnosis and Pathology of Some Obscure Cases of Bone Lesions.—Lovett and Wolbach (*Surgery, Gynecology and Obstetrics*, 1920, xxxi, 2, 111) very carefully report with pathological findings 25 cases with obscure bone lesions. The cases presented are those in which there was, in the minds of the writers, doubt as to the correct diagnosis from the *x*-ray and other data available before operation. Considering the behavior of bone in general, as studied by the *x*-ray, it seems to be a structure of very limited reaction to pathological conditions. There seem to be only three reactions possible in bone: (1) atrophy or diminution in lime content; (2) destruction of bone tissue, local or general; (3) a formative process, characterized by the formation of new bone, or a condensation of existing bone around a focus of disease. The errors in diagnosis in the experience of the writers has been in mistaking tuberculosis for other things. The other troublesome confusion was between osteomyelitis and syphilis. The serious problem of differential diagnosis occurs most often in cases in which focal lesions are present, in which the phenomena of formative and destructive activity have become so mixed that without pathological examination, in many of them diagnosis is impossible. The advantage of such a diagnosis made during operation is evident to the surgeon because it guides him in the treatment of the bone cavity. The diagnosis of infectious lesions of the bones would be simple if each infectious agent produced the same reaction. The pyogenic bacteria alone may be counted on to conform to this type. Syphilis affects the bone in two ways and results either in destruction of the bone or the new formation of bone. In tuberculosis of bone there may occur: (1) exudate, fibrinous or puriform, (2) discrete proliferative lesions, (3) a diffuse proliferative reaction, essentially tuberculous granulation tissue. Tuberculosis may simulate any other infectious process in location and character of the lesion. Diagnosis from x-ray studies alone is occasionally impossible.

The Treatment of Chronic Empyema.—HEDBLOOM (*Annals of Surgery*, 1920, lxxii, 3, 288) says chronic empyema has been recognized and treated during twenty-six centuries, but it is only sixty years since the first rib resection for drainage was done. The successive stages in the progress of treatment since that time are as follows: Increasingly radical treatment, designed to obliterate the cavity by the collapse of the chest wall, involving successively more extensive operations, and culminating finally in a complete radical resection. A conservative trend manifested primarily in the modifications of the complete resection, but more in the attempt to preserve the chest wall and to restore the lung to its structural and functional relationships as first advocated by Delorme. The adaptation of the Carrel-Dakin hypochlorite solution technic to the treatment of chronic empyema cavities. Chronic empyema is a disease which is not incompatible with life nor with a fair degree of health and usefulness. The principles of treatment should, therefore, be first, the preservation of life, and second, as far as possible, the conservation of function. Shortening convalescence, while very desirable, should always be a subsidiary consideration. The choice of treatment must be made with cognizance of the variable etiology and pathology of the process, and the general condition of the patient. A major procedure is indicated only if non-operative or less extensive surgical treatment reasonably may be considered less effective. In case of sinuses and small cavities, adequate drainage is usually sufficient to effect a cure with or without short preliminary hypochlorite solution treatment. It is at least open to question whether a radical operation is indicated in these cases for the sole purpose of shortening convalescence at the risk of an appreciably increased mortality. Dakin's hypochlorite solution treatment is the method of choice in the treatment of the ordinary type of chronic empyema cavity of any size, for the following reasons: The general condition of the patient is, as a rule, improved to a remarkable degree. The cavity may be obliterated or greatly reduced in capacity by the liberation and expansion of the lung (resulting from the treatment). If the lung expands in part the extent of a later operation will be proportionately reduced. If the lung entirely fails to expand, the cavity will have become relatively sterile in preparation for operation, thereby lowering postoperative morbidity and